APQ-56 IMPROVEMENT PROGRAM

4/10/57

SYSTEM

All 1.15 Resolution Problem - STAT

Presently, the resolution of the recorder is not equal to that of a 0.1 us transmitting and receiving system. On April 2 the possibilities of an improved CRT resolution were discussed with DuMont engineers. A possible three-step improvement program was proposed: (1) Get the most out of the present tube. (2) Get the most out of the present phosphor. (3) Utilize "Clear" phosphors.

In step (1) the spot size of the present tube can be decreased by 40% by using 20 KV instead of the present 10 KV and increasing the other voltages accordingly. This gives a 100% spot area or resolution improvement. In step (2) by using the present phosphor and looking at the back of it thru a "dipper tube" window the spot size will be 1/2 to 1/3 its "front view" size, and the area resolution increased several hundred percent. Such a tube could be made available in four months. In step (3) a clear phosphor would be used resulting in a spot size of approaching 1/2 mil in diameter when using 20 KV. This would be a 600% improvement over the present CRT spot diameter and an area improvement of 3600%. Such a tube, which is also front view, could be available in one year.

XH-2 XH-3 NAVY 2.14 Recorder Cooling - STAT

Trial installation of blowers on one XH-2 recorder has been accomplished. It is planned that modification of the other two XH-2 recorders will start on 17 April. The new design for the camera cover is in work in the Model Shop and it is anticipated that this will be ready for installation by 30 April. Since the XH-3 recorder used in the Monticello project is in a limited space area, a different design for the blower installation is required. Preliminary drawings for this modification were released to the Model Shop on 8 April. Necessary parts should be available on 17 April to allow modification of both XH-3 recorders.

XH-2 XH-3 NAVY 4.9 R. F. High Voltage Power Supply - STAT

The problem of sealing the cracks of the "Stycast" (white) material has been attached by various available means such as coating with "Scotchcast" (red), a medium density insofoam, and thermo setting glass tape; patching with a quick-drying resilient epoxy resin; and potting with a filler type "Stycast" material. No definite conclusions have been reached as yet because the tests are not complete; however, several methods look promising.

Some phases of environmental testing of the unit is also in process.

All 6.15 P. E. Cell - STAT

Three P. E. Cell Test Sets are being built and tested to establish the sensitivity of P. E. Cells. All sets have been built. Further tests with the internal voltage regulator moved external seems to indicate that this change will be required if no additional cooling can be obtained for the test set. A frequency response of the timed circuit on any one set indicates that a 5% change in frequency gives a 3.3% change in output.

SYSTEM

All 11.15 Quick Disconnect Waveguide - [redacted] STAT

Parts are now on hand to permit modification of all Time-Shared equipments. This change will be included in the Mod Kit to incorporate maggie and klystron fins since the simultaneous drawing hangers are involved. These drawings are now being checked in Drafting. (Same as last report).

All 12.15 Pulse Cable Connectors - [redacted] STAT

Five sets of pulse cable connectors of a new design have been received. Their adaptability to APQ-56 system has not yet been determined. (Same as last report).

Time Shared 13.15 AGC - [redacted] STAT

Design a new AGC that will be less susceptible to radio-frequency interference and stray pick-up.

Drafting has finished the final chassis layout of the new AGC.

A possible new type of shielding can for the coils is being worked out in conjunction with Components Engineering.

Time Shared 17.11 Wide Band Receiver - [redacted] STAT

The receiver is still in the system and working. The video amp. will be corrected when taken out this week for another setup.

All 19.11 Receiver Design - [redacted] STAT

A preliminary investigation of the AGC problem was made. Data concerning the variations in noise level that can be expected was not accurately determined so this problem was not resolved. It appears that most of the variations in noise level can be attributed to the cathode-ray tube so a stabilization of this part of the system seems desirable.

The video amplifier is being electrically designed irrespective of the AGC requirements at this time.

All 21.9 Pulse Width (Quick Fix) - [redacted] STAT

All parts for modification of three units have been received. One set of parts has been shipped to field for a trial run in one side of XH-3 system. No reports from field have been received to date. (Same as last report).

All 22.7 Resolution Test Set [redacted] STAT

A means of measuring recorder resolution is needed in the field. Eight resolution test sets are being built by S. R. for the Time Shared System using commercial type construction. Construction is under way in the Lab. (Same as last report).

XH-2 XH-3 NAVY 23.4 2 KV Distribution - [redacted] STAT

Engineering work has been completed on this 2 KV Distribution.

SYSTEM

Time Shared XH-3 NAVY

24.1 Deflection Driver Drift - [redacted] STAT

Changing feedback resistors R-5606 and R-5616 to 10 watt wirewound shows improvement but is not complete solution. Lowering filament voltage of V-5601 by placing approximately 1.5 ohm resistor in series with filament stops or reverses drift.